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Published on: 8 Dec 2013

Countries: Ethiopia

Research themes: Cities

Road networks and enterprise performance in Ethiopia: Evidence from the road sector development programme

Poor infrastructure and high transport costs are among the major constraining factors for Africa's global competitiveness and economic growth (World Bank 2009, Bloom and Sachs 1998). Transport costs in Africa are indeed among the highest in the developing world. Recently, many African countries have begun to address this problem through large-scale investment programmes in infrastructure. Existing studies associate improvements in transport networks with a range benefits including poverty reduction, international competitiveness and economic growth (Banerjee et al. 2012, Hendersen 2000, Buys et al. 2010). More explicitly, lower transport costs imply improved market access for firms, economies of scale and integration across geographic locations (Lall et al. 2004, Graham 2007, Holl 2006, 2011). Reduced transport costs may also lower input prices, facilitate access to specialised labour, and promote agglomeration economies. It is through these channels that the quality of transport infrastructure is likely to affect enterprise performance.

Through a series of road sector development programmes (RSDP) implemented during 1997-2010, the Ethiopian government has invested more than $5 billion on road infrastructure. Among the major activities of the RSDPs were 17 projects to rehabilitate major trunk roads, 26 upgrading projects of trunk roads, upgrading of 32 link roads (roads that link trunk roads) and construction of 73 link roads. The result of this government investment in road infrastructure was a 70% growth in road density per 1000km2 and an increase in the fraction of roads in good and serviceable conditions from 22% to 54% during the stated period (ERA 2009).

More nuanced measurements of road networks using GIS analysis also revealed large increases in road accessibility of towns following the RSDP and significant reduction in average travel time to major economic centres. In Shiferaw et al. (2012 a, b), we went on to investigate the impact of these improvements in road networks on the location decisions of Ethiopian manufacturing firms and their performance.

The specific questions we raised include:

- Does improvement in road networks make towns more attractive for manufacturing firms? In other words, does the RSDP influence firms' location choices?

- Has the start-up size of manufacturing firms increased due to better road networks?
- How large are the productivity gains for firms of improved market accessibility, and are they uniform across firm size?

We address these questions by combining town level panel dataset on manufacturing firms with GIS based information on the quality and quantity of Ethiopian roads. We find that towns with better road networks (as a result of the program) attracted larger number of startup firms leading to a reduction in the geographic concentration of firms away from historical centers of manufacturing. Entrepreneurs have also responded by increasing the size of startup firms possibly due to better prospect of survival and subsequent growth. In terms of post-entry performance, we find that road accessibility of towns improves firm productivity and reduces inventory of raw material as a result of faster and reliable access to input and output markets.

Further reading

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